CLAIMS:

1. An audio correction system for enhancing spatial and frequency response characteristics of sound reproduced by two or more loudspeakers, said audio correction system comprising:

an image correction module configured to correct a perceived vertical image of sound when said sound is reproduced by a plurality of loudspeakers;

a bass enhancement module configured to enhance a perceived bass response of said sound when said sound is reproduced by a plurality of loudspeakers; and

an image enhancement module configured to enhance a horizontal image of sound when said sound is reproduced by a plurality of loudspeakers.

2. The audio correction system of Claim 1, wherein correction provided by said image correction module precedes enhancement provided by said bass enhancement module.

3. The audio correction system of Claim 1, wherein bass enhancement provided by said bass enhancement module precedes image enhancement provided by said image enhancement module.

4. The audio correction system of Claim 1, wherein bass enhancement provided by said bass enhancement module precedes image enhancement provided by said image enhancement module.

5. An image enhancement system comprising:

at least two audio signals, said audio signals having common-mode information which is common to said audio signals and differential information which is not common to said audio signals;

a first amplifier in communication with one of said audio signals, said first amplifier having an inverting input and a non-inverting input;

a second amplifier in communication with one of said audio signals, said second amplifier having an inverting input and a non-inverting input;

a first filter in communication with said non-inverting input of said first amplifier and said non-inverting input of said second amplifier, said first filter configured to modify at first set of frequencies in said differential information;

a second filter in communication with said inverting input of said first amplifier and said inverting input of said second amplifier, said second filter configured to modify a second set of frequencies;

a third filter in communication with said inverting input of said first amplifier and an output of said first amplifier, said third filter configured to modify a third set of frequencies, wherein said first, second and third sets of frequencies are combined to create a first enhanced output signal; and

a fourth filter in communication with said inverting input of said second amplifier and an output of said second amplifier, said third fourth configured to modify a fourth set of frequencies, wherein said first, second and fourth sets of frequencies are combined to create a second enhanced output signal.

6. A sound enhancement system comprising:

a first sound enhancement module configured to correct a perceived height of an apparent sound stage produced by a plurality of loudspeakers;

a second sound enhancement module configured to correct a perceived bass response of said loudspeakers; and

a third sound enhancement module configured to correct a perceived width of said apparent sound stage.

7. The sound enhancement system of Claim 6, wherein said first sound enhancement module is further configured to correct a perceived vertical location of said apparent sound stage.

8. The sound enhancement system of Claim 6, said first sound enhancement module comprising a left-channel filter to filter sounds in a left signal channel and a right-channel filter configured to filter sounds in a right signal channel.

9. The sound enhancement system of Claim 8, said left-channel filter and said right-channel filter configured to filter said left and right channels in accordance with a variation in frequency response of a human auditory system as a function of vertical position of a sound source.

10. The sound enhancement system of Claim 8, said left-channel filter and said right-channel filter configured to emphasize lower frequencies relative to higher frequencies.

11. The sound enhancement system of Claim 6, said second sound enhancement module configured to emphasize portions of lower frequencies relative to higher frequencies.

12. The sound enhancement system of Claim 6, said second sound enhancement module configured to receive a plurality of input signals and to emphasize common-mode portions of lower frequencies of said input signals relative to higher frequencies of said input signals.

13. The sound enhancement system of Claim 6, said second sound enhancement module comprising:

a first combiner configure to combine a least a portion of a left channel signal with at least a portion of a right channel signal to produce a combined signal;

a filter configured to select a portion of said combined signal to produce a filtered signal;

a variable gain module configured to adjust said filtered signal in response to an envelope of said filtered signal to produce a bass enhancement signal;

a second combiner configured to combine at least a portion of said bass enhancement signal with said left channel signal; and

a third combiner configured to combine at least a portion of said bass enhancement signal with said right channel signal.

14. The sound enhancement system of Claim 10, said variable gain module comprising an expander.

15. The sound enhancement system of Claim 10, said variable gain circuit comprising a compressor.

16. The sound enhancement system of Claim 6, said third sound enhancement module configured to receive input signals comprising a left-channel input and a right-channel input, said third sound enhancement module further configured to provide a common-mode behavior in response to common-mode portions of said input signals and to provide a differential-mode behavior in response to differential mode portions of said input signals.

17. The sound enhancement system of Claim 6, said third sound enhancement module configured to provide a common-mode transfer function and a differential-mode transfer function.

18. The sound enhancement system of Claim 17, wherein said differential-mode transfer function emphasizes lower frequencies relative to higher frequencies.

19. The sound enhancement system of Claim 17, wherein said differential-mode transfer function is configured to provide a first de-emphasis for frequency components in a first frequency band, provide a second de-emphasis for frequency components in a second frequency band, provide a third de-emphasis for frequency components in a third frequency band, and provide a fourth de-emphasis for frequency components in a fourth frequency band, said first frequency band lower than said second frequency band, said second frequency band lower than said third frequency band, and said third frequency band lower than said fourth frequency band, said second de-emphasis less than said first de-emphasis and said third de-emphasis.

20. A method for enhancing audio sounds to improve a perceived sound stage and to improve perceived bass components of said sound, comprising the acts of:

height-correcting a sound signal to improve a perceived height of an apparent sound stage produced by a plurality of loudspeakers;

bass-enhancing a sound signal to enhance a perceived bass response of said loudspeakers;

width-correcting a multi-channel sound signal to perceived width of an apparent sound stage produced by said multi-channel sound signal.

21. The method of Claim 21, wherein said act of height-correcting comprises filtering said sound signal to change a perceived vertical location of said apparent sound stage as heard by a listener.

22. The method of Claim 21, where said act of height-correcting comprises the acts of filtering signals in a left signal channel and filtering signals in a right signal channel.

23. The method of Claim 22, wherein said act of filtering comprises adjusting frequency components of said left signal channel and said right signal channel in accordance with a variation in the vertical spatial frequency response of human hearing.

24. The method of Claim 22, wherein said act of filtering comprises emphasizing lower frequencies relative to higher frequencies.

25. The method of Claim 20, wherein said act of bass-enhancement comprises emphasizing portions of lower frequencies relative to higher frequencies.

26. The method of Claim 20, wherein said act of bass-enhancement comprises emphasizing common-mode portions of lower frequencies of a multi-channel input signal relative to higher frequencies of said multi-channel input signal.

27. The method of Claim 20, wherein said act of bass-enhancement comprises the acts of:

combining at least a portion of a left channel signal with at least a portion of a right channel signal to produce a combined signal;

filtering said combined signal to produce a filtered signal;

amplifying said filtered signal according to an envelope of said filtered signal to produce a bass enhancement signal;

combining at least a portion of said bass enhancement signal with said left channel signal; and

combining at least a portion of said bass enhancement signal with said right channel signal.

28. The method of Claim 27, wherein said act of amplifying comprises compressing said filtered signal during an attack time period.

29. The method of Claim 27, wherein said act of amplifying comprises expanding said filtered signal during a decay time period.

30. The method of Claim 20, wherein said act of width-enhancing comprises the acts of identifying a common-mode portion of said multi-channel sound signal and adjusting said common-mode portion according to a common-mode behavior, and identifying a differential-mode portion of said multi-channel sound signal and adjusting said differential-mode portion according to a differential mode behavior.

31. The method of Claim 20 wherein said act of width-enhancing comprises applying a common-mode transfer function and applying a differential-mode transfer function to said multi-channel sound signal.

32. The sound enhancement system of Claim 31, wherein said act of applying a differential-mode transfer function comprises the act of emphasizing lower frequencies relative to higher frequencies.

33. The sound enhancement system of Claim 31, wherein said act of applying a differential-mode transfer function comprises:

de-emphasizing frequency components in a first frequency band according to a first de-emphasis value;

de-emphasizing frequency components in a second frequency band according to a second de-emphasis value, said second frequency band higher in frequency than said first frequency band;

de-emphasizing frequency components in a third frequency band according to a third de-emphasis value, said third frequency band higher in frequency than said second frequency band, said second de-emphasis value relatively less than said first de-emphasis value and said third de-emphasis value; and

de-emphasizing frequency components in a fourth frequency band according to a fourth de-emphasis value, said fourth frequency band higher in frequency than said third frequency band, said fourth de-emphasis value relatively less than said first de-emphasis value and said third-de-emphasis value.

34. A sound enhancement system comprising:

a height-corrector for correcting a perceived height of an apparent sound stage;

a bass-enhancer for enhancing bass response of a sound signal;

a width-corrector for correcting a perceived width of said apparent sound stage.

35. A sound enhancement system comprising:

a height-corrector for correcting a perceived height of an apparent sound stage;

means for enhancing bass response of a sound signal;

a width-corrector for correcting a perceived width of said apparent sound stage.

36. A sound enhancement system comprising:

a height-corrector for correcting a perceived height of an apparent sound stage;

a bass-enhancer for enhancing bass response;

means for correcting a perceived width of said apparent sound stage.